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THE NEARCTIC SPECIES OF *HORISMENUS* WALKER

(HYMENOPTERA: EULOPHIDAE)

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ABSTRACT—A redefinition of the genus *Horismenus* Walker, with a key to the Nearctic species. Several species of this genus are primary parasites of bruchid beetles and others are primary or secondary parasites of Lepidoptera. Other species parasitize curculionid larvae, buprestid or cerambycid larvae, or Diptera living in grass stems. Two species are secondary parasites in the egg cases of spiders. *H. bruchophagus*, *carolinensis*, *ignotus*, *latroducti* n. spp.; (*euplectri* Howard) = *fraternus* (Fitch), (*violacea* Ashmead) = *fraternus* (Fitch), (*ancyllae* Girault) = *microgaster* (Ashmead), (*flavipes* Ashmead) = *sardus* (Walker) n. syn.; *Galeopsomyia haemon* (Walker) n. comb. for *Horismenus haemon*.

The Nearctic species of the genus *Horismenus* Walker have never before been revised, although this is a genus of common eulophid parasites in North America. *Horismenus*, *Pediobius*, and *Tetrastichus* are

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probably the three most commonly encountered eulophid chalcidoids in the Nearctic region; the latter two genera have already been revised (Burks, 1966, 1943).

The biological relationships of the species of *Horismenus* are rather diverse. Specimens are often reared as primary or secondary parasites of small Lepidoptera, or as primary parasites of Coleoptera belonging to the families Bruchidae or Curculionidae. They are extremely common parasites of bruchids. One Nearctic species of *Horismenus* is a probable secondary parasite of the larvae of round-headed and flat-headed wood-boring beetles. Another species emerges from small Diptera living in the stems of grasses. Two Nearctic species are secondary parasites in the egg cases of spiders.

I am greatly indebted to Dr. G. J. Kerrich, Commonwealth Institute of Entomology, London, for sending me detailed information about *Horismenus cleodora* Walker, the type-species of *Horismenus*. The single type specimen of *cleodora*, from Lima, Perú, is in the British Museum (Natural History) collections and was presented by C. Darwin, Esq. I also am grateful to the authorities of the British Museum (Natural History) for making it possible for me to study the type of *Entedon sardus* Walker.

Horismenus Walker

- Horismenus* Walker, 1843, Ann. Mag. Nat. Hist. 11:117.—Ashmead, 1904, Mem. Carnegie Mus. 1(4):341.—Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 432.—Crawford, 1911, Proc. U.S. Natl. Mus. 40:445.—Girault, 1913, Mem. Queensland Mus. 2:152.—Girault, 1915, Can. Ent. 47:234.—Viereck, 1916, Conn. Geol. Nat. Hist. Sur. Bull. 22, p. 456.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Nikolskaya, 1952, Chalcid Fauna USSR, Akad. Nauk USSR, Fauna USSR 44, p. 268.—Bouček in Kratochvíl, 1957, Klič Zvěřeny ČSR, 2:277.—Peck, 1963, Can. Ent. Suppl. 30:217.—Bouček and Hoffer (trans. Peck), 1964, Mem. Ent. Soc. Can. 34:103.—Bouček, 1965, Acta Ent. Mus. Nat. Prag. 36:84. Type-species: *Horismenus cleodora* Walker; monotypic.
- Pseudomphale* Schrottky, 1909, Ann. Soc. Cient. Arg. 67:209.—Girault, 1915, Can. Ent. 47:234 (syn. of *Horismenus*). Type-species: *Pseudomphale opsiphanis* Schrottky; monotypic.
- Pediobioidea* Girault, 1911, Can. Ent. 43:407 (syn. under *Horismenus* when descr.). Type-species: *Pediobioidea cyanea* Girault; monotypic.
- Triolynx* Cameron, 1913, Timehri, Jour. R. Agr. Com. Soc. Brit. Guiana 3:130.—Bouček, 1965, Acta Ent. Mus. Nat. Prag. 36:84 (syn. of *Horismenus*). Type-species: *Triolynx clavicornis* Cameron; monotypic.
- Akonda* Cameron, 1913, Timehri, Jour. R. Agr. Com. Soc. Brit. Guiana 3:131.—Bouček, 1965, Acta Ent. Mus. Nat. Prag. 36:84 (syn. of *Horismenus*). Type-species: *Akonda hipparchia* Cameron; monotypic.
- Dirphiphagus* Brèthes, 1917, Ann. Zool. Apl. 4:25. **New synonymy.** Type-species: *Dirphiphagus ancilla* Brèthes; orig. desig.

Holcopenomorpha Blanchard, 1942, Ann. Soc. Cient. Arg. 134:126.—Bouček, 1965, Acta Ent. T. us. Nat. Prag. 36:84 (syn. of *Horismenus*). Type-species: *Holcopenomorpha christenseni* Blanchard; orig. desig.

In the literature the genus *Holcopenella* Foerster, 1856, has long been listed as a synonym of *Horismenus* (see Ashmead, 1904, p. 377; Peck, 1951, p. 467, and numerous other authors). As Graham, 1959, and Bouček, 1965, have pointed out, however, this is a mistake. *Holcopenella* differs generically from *Horismenus* in having the occiput sharply carinate and in having a scutellum that lacks lateral carinate.

The name *Horismenus* itself spent most of the last century in synonymy. Three years after he described it, Walker (1846, p. 66) synonymized it under *Entedon* Dalman. Subsequent authors left it in synonymy until Ashmead (1904) resurrected it and employed it as a valid genus. Cresson (1887, p. 344) listed *Horismenus* as a synonym of *Euderus* Haliday, but that almost certainly was an error in citation.

Generic description.—Head with a prominent transverse frontal carina, paraclypeal areas always sculptured; eyes large and more or less hairy; malar furrow absent, malar space and cheeks narrow, temples narrow; occiput not margined; antennae inserted below center of frons, at or slightly above level of ventral margins of compound eyes; scape short, its apex never exceeding level of anterior ocellus; female with 3 funicular segments, male with 4, club with 2 segments and an apical spicule in both sexes.

Anterior margin of pronotum dorsally carinate, this carina sometimes weak or interrupted; notaulices complete, often weak anteriorly, terminating posteriorly in a pair of vaguely defined, elongate depressions, each depression bearing a single strong bristle; prepectus large, triangular; scutellum with a median longitudinal carina, a pair of lateral carinae (these formed from series of more or less coalesced punctures), and an apical carina (the latter may or may not be interrupted on the meson); postscutellum prominent, usually sculptured near base, smooth at apex; forewing with marginal vein very long, submarginal vein short, stigmal vein bud-like, sessile, postmarginal vein very short, its apex vaguely defined; hindwing with 3 hamuli; each tarsus with 4 segments, these may be subequal in length or the apical one may be slightly the longest.

Propodeum with a pair of circular or slitlike spiracles, paraspiracular carinae present or absent; a narrow, longitudinal smooth area present on meson of propodeum in almost all species, this smooth area bordered on each side by a narrow shagreened area; apex of scutellum necklike, surface of this neck sculptured, rest of propodeum smooth and shining except for a pair of small shagreened areas at anterior margin between meson and spiracles that is present in some species. Petiole stout, its surface sculptured, a median, longitudinal, dorsal carina usually present. Gaster dorsally smooth and shining, usually with narrow shagreened areas near posterior margins of terga, lateral and ventral areas of gaster with lineolate, longitudinal sculpture; first gastral tergum comprising a large part of the gaster, often comprising $\frac{1}{2}$ or more its extent.

Body heavily sclerotized and deeply punctured, typically compact and beetle-like. Heads and bodies having no tendency to shrink or collapse in drying after death.

Horismenus, KEY TO NEARCTIC SPECIES, FEMALES

1. Hind tibiae partly or mostly dark 2
 Hind tibiae entirely pale yellow or white 5
2. Scutellum uniformly sculptured over all its surface with a sculpturing that is almost as strong as that of the praescutum **lixivorus** (Crawford)
 Scutellum very faintly sculptured or smooth and shining over most of its surface; strong sculpture, if present, limited to lateral areas 3
3. First gastral tergum entirely smooth or with extremely faint apical sculpture **latrodicti**, n. sp.
 First gastral tergum with strong apical sculpturing 4
4. First gastral tergum with apical $\frac{2}{3}$ sculptured; hind tibia dark only at base **microgaster** (Ashmead)
 First gastral tergum with a narrow cross-band of sculpturing near apex, otherwise smooth; hind tibia with basal $\frac{1}{2}$ to $\frac{2}{3}$ dark **carolinensis**, n. sp.
5. Hind femora black or dark with metallic luster 6
 Hind femora entirely pale yellow or white 7
6. First gastral tergum constituting more than $\frac{1}{2}$ the length of gaster; hind femur with dusky, non-metallic shading **floridanus** (Ashmead)
 First gastral tergum constituting $\frac{1}{2}$ or less the length of gaster; hind femur with very dark, metallic blue or blue-green shading **texanus** (Girault)
7. Scutellum flattened and in the same plane as the propodeum; scutellar sculpture faint; general color dark metallic green **depressus** Gahan
 Not as above; scutellum not flattened and in the same plane as the propodeum 8
8. Face and median area of propodeum reticulated **ignotus**, n. sp.
 Face, at least in median area, smooth and shining; narrow, elongate area on meson of propodeum smooth and shining 9
9. Basal gastral tergum constituting $\frac{3}{4}$ or more dorsal length of gaster; apical $\frac{2}{3}$ of basal gastral tergum sculptured 10
 Basal gastral tergum constituting less than $\frac{3}{4}$ the dorsal length of gaster 11
10. Thorax bright metallic green **missouriensis** (Ashmead)
 Thorax black, sometimes with a faint blue tinge **bruchophagus**, n. sp.
11. Head, thorax, and gaster bright metallic blue-green; basal gastral tergum smooth except for a narrow, reticulate crossband just before apex **fraternus** (Fitch)
 Head, thorax, and gaster shining black, or head and thorax metallic green with gaster mostly shining black and apical half of basal gastral tergum sculptured 12
12. Head and thorax metallic green, gaster mostly shining black; apical half of basal gastral tergum sculptured **productus** (Ashmead)
 Head, thorax, and gaster shining black; less than apical half of basal gastral tergum sculptured 13
13. Antennal scape dark brown to black **atroscapus** (Girault)
 Antennal scape pale yellow to white 14

14. Scutellum strongly sculptured and lateral groove formed from single row of punctures **nitens** (Howard)
 Scutellum weakly sculptured, almost smooth and with multiple crenulate grooves at lateral margins **sardus** (Walker)

Horismenus atroscapus (Girault)

Pseudomphale atroscapus Girault, 1917, Descr. Stell. Nov., p. 20.

Horismenus atroscapus (Girault): Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 217.

Described from 2 female specimens. Lectotype ♀, U.S.N.M. catalog no. 20105, labeled, "Bred from *T. subcanalis* Wlk., 31-VIII-1915, Monticello, Fla., 20-VIII-15, Quaintance No. 10566, Al. Fabis collector." Present designation of lectotype.

Distribution.—N. C., Fla.

This seems to be a primary parasite of the small pyralids, *Tetralopha subcanalis* (Walker) and *Acrobasis rubrifasciella* (Packard). It is likely that it also will be found to parasitize other pyralids.

Horismenus bruchophagus, n. sp.

This species agrees with *missouriensis* Ashmead in having the legs beyond the coxae entirely pale yellow or white, in not having the scutellum flattened, and in having the basal gastral tergum sculptured over its apical $\frac{2}{3}$ with this tergum comprising $\frac{3}{4}$ the length of the gaster; they differ in that *missouriensis* has the thorax bright metallic green, but the thorax of this species is shining, jet black, with a faint blue tinge sometimes visible, and in *missouriensis* the sculpture on the vertex is much finer than on the parascrobal spaces, but the sculpture is equally coarse on these two areas in *bruchophagus*.

Female.—Length, 1.6–2.0 mm. Frons faintly metallic blue, otherwise head and body shining, jet black with a faint blue tinge sometimes visible; antennal scapes and legs beyond coxae light yellow or white, antennal flagellum with faint metallic blue sheen; wing veins brown.

Face and genae smooth, shining; parascrobal area below frontal groove strongly shagreened, narrow area on meson of vertex smooth, shagreened laterally, occiput shagreened; temples smooth ventrally, lightly reticulated dorsally. Eyes rather sparsely hairy. Apex of antennal scape surpassing frontal groove, but not reaching level of anterior ocellus; relative proportionate lengths of parts of antenna—pedicel, 60; first funicular segment, 60; second, 50; third, 50; club, 100.

Praescutum and scutum strongly sculptured, axillae weakly sculptured, scutellum shining, with very weak sculpture; lateral and apical margins of scutellum formed by rows of punctures, apical margin interrupted on meson; postscutellum smooth and shining, sculptured areas at base more or less hidden. Propleuron and anterior part of mesopleuron sculptured, rest of mesopleuron smooth and shining; coxae faintly sculptured with irregular striae.

Propodeum lying on a plane parallel to horizontal axis of body; narrow median area and anterior half of lateral area smooth; circular area near each anterolateral angle, narrow, elongate area on each side of median smooth area, and posterior half of lateral area, reticulated. Petiole vertical, only slightly longer than broad, a

median, dorsal, longitudinal carina present; surface of petiole minutely and closely reticulated. Gaster normally slightly shorter than thorax, but posterior terga may be distended; apex acute; basal gastral tergum sculptured over its apical $\frac{2}{3}$ and this tergum comprising $\frac{3}{4}$ the length of the gaster.

Male.—Length, 1.2–1.8 mm. Frons, genae, and vertex bright metallic blue, coxae with faint metallic blue sheen, otherwise head and body shining, jet black; legs beyond coxae pale yellow or white; entire antenna brown with metallic blue luster. Antennal scape greatly inflated, its apex just surpassing level of frontal groove; relative proportionate lengths of parts of antenna—pedicel, 50; first funicular segment 50; second, 50; third, 50; fourth, 50; club, 70; face faintly reticulated; petiole $1\frac{1}{2}$ times as long as wide; gaster $\frac{2}{3}$ as long as thorax, basal gastral tergum normally comprising the entire gaster, with apical terga withdrawn beneath it and only genitalia protruding.

Type locality.—Brownsville, Texas.

Type.—U.S.N.M. catalog no. 70847.

Described from 211 female and 53 male specimens, as follows. Holotype (♀), allotype (♂), and 192 paratypes (148♀, 44♂), reared at Brownsville, Texas, in 1921 from seeds of *Acacia tortosa* infested by the bruchid *Mimosestes sallaei* (Sharp) by J. C. Bridwell; 62♀, 7♂ paratypes, reared at Kingsville, Texas, May 1923, from beans of huisache [*Acacia*], by M. M. High; 2♀ paratypes, reared at Victoria, Texas, Sept. 6, 1907, possibly from *Mimosestes sallaei*, under Hunter number 1410.

Biological relationships.—This species is a primary parasite of bruchids infesting the seeds of acacias.

***Horismenus carolinensis*, n. sp.**

Horismenus sp., Leiby, 1925, Bull. N. C. Dept. Agr., Feb., p. 60.

Horismenus n. sp., Beal and Massey, 1942, Jour. For. 40:318.

This species agrees with *lixivorus* Crawford in having dark colored legs, in having the antennal scape dark, and in having the basal gastral tergum provided with strong apical sculpturing. It differs from *lixivorus* in having the scutellum almost smooth, very faintly sculptured, rather than strongly sculptured, in having the funicular segments slender, longer than wide, rather than slightly wider than long, and in having the vertex black rather than metallic green.

Female.—Length, 1.8–2.2 mm. Black, without metallic luster; apices of femora, bases and apices of tibiae, and basal tarsal segments, white, legs otherwise very dark brown to black; wing veins dark brown.

Face and genae smooth and shining; parascrobal areas below transverse frontal groove shagreened; vertex shining, faintly reticulated; occiput and temples reticulated. Eyes densely hairy. Apex of antennal scape almost reaching level of anterior ocellus, surpassing level of frontal groove; relative proportionate lengths of parts of antenna—pedicel, 60; first funicular segment, 50; second, 40; third, 30; club, 70.

Praescutum and scutum reticulated, axillae very faintly sculptured, almost smooth; scutellum smooth medially, faintly sculptured laterally; lateral grooves

of scutellum formed of elongate punctures, apical groove crenulate near lateral margins, obsolete on meson; postscutellum with a pair of elongate submedian, shagreened areas at base, apex smooth and shining; propleuron reticulated, mesopleuron smooth and shining; hind coxae faintly reticulated.

Propodeum smooth laterally and on narrow median area, the latter with a shagreened area on each side, apical third of propodeum shagreened. Petiole vertical, as wide as long, its surface closely and minutely sculptured; median, dorsal, longitudinal carina present on petiole. Gaster slightly longer than thorax, its apex acute; basal gastral tergum with a narrow band of strong sculpturing near its posterior margin, this tergum comprising $\frac{1}{2}$ the length of gaster.

Male.—Length, 1.5–2.0 mm. Apex of antennal scape almost reaching level of anterior ocellus; relative proportionate lengths of parts of antenna—pedicel, 50; first funicular segment, 70; second, 40; third, 40; fourth, 40; club, 80, petiole $1\frac{1}{2}$ times as long as wide; gaster $\frac{2}{3}$ as long as thorax; basal gastral tergum reticulated near apex and this tergum comprising almost all of gaster.

Type locality.—Lake Waccamaw, North Carolina.

Types.—U.S.N.M. catalog no. 70845.

Described from 5 female and 4 male specimens. Holotype (♀), allotype (♂), and 1♂ paratype, Lake Waccamaw, North Carolina, reared April 23, 1917, from larva of the flat-head appletree borer, *Chrysobothris femorata* (Olivier); 4♀, 2♂ paratypes, Durham, North Carolina, reared from the twig girdler, *Oncideres cingulata* (Say).

Biological relationships.—Although the specimens from which this species is described are labeled as having been reared directly from a buprestid beetle and a cerambycid beetle, it is likely that this is actually a secondary parasite.

Horismenus depressus Gahan

Horismenus depressus Gahan, 1930, Proc. U.S.N.M. 77(8):8.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 217.

Described from 18 female and male specimens; type (♀), U.S.N.M. no. 41101.

Distribution.—Tex., Calif.

This is a primary parasite of the bruchid *Stator pruininus* (Horn), infesting the seeds of *Acacia* and Mexican ironwood, *Olnya*. It has also been reared from a "*Bruchus* sp." in *Acacia* seeds in South Texas.

Horismenus floridanus (Ashmead)

Holcopelte floridana Ashmead, 1888, Can. Ent. 20:102.—Dalla Torre, 1898, Cat. Hym. 5:28.

Horismenus floridanus (Ashmead); Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 432.—Gahan, 1933, U.S. Dept. Agr. Misc. Pub. 174, p. 128.—Gilmore, 1938, Jour. Econ. Ent. 31:715.—Fulton, 1940, Ann. Ent. Soc. Amer. 32:233.—Brimley, 1942, Ins. N. C. Suppl., p. 34.—Nickels, 1951, Jour. Econ. Ent. 44:434.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Painter,

1955, Jour. Econ. Ent. 48:41.—Burks in Krombein *et al.*, 1958, U.S. Dept. Agr. Monog. 2, Suppl. 1, p. 68.—Peck, 1963, Can. Ent. Suppl. 30, p. 218.

Described from a single female specimen; type U.S.N.M. no. 41371. Distribution.—From N. J. west to Ind., Ill., and Kans., south to Fla. and Tex.

This is a secondary parasite of Lepidoptera. It is known to attack *Apanteles*, but it probably also attacks other primary parasites.

Horismenus fraternus (Fitch)

Trichogramma? *fraterna* Fitch, 1856, Country Gentleman 7:235.—Fitch, 1856, Trans. N.Y. State Agr. Soc. 15:449.—Fitch, 1856, Rpt. Nox. Ins. N.Y., p. 217.—Howard, 1885, U.S. Dept. Agr. Div. Ent. Bull. 5, p. 47.—Lintner, 1886, Rpt. Inj. Ins. N.Y., 2, p. 79.—Cresson, 1887, Synopsis Hym. Amer. N. of Mex., p. 246.—Riley, 1888, U.S. Dept. Agr. Div. Ent. Bull. 10, p. 34.—Packard, 1890, U.S. Dept. Agr. Rpt. Ent. Com. 5, p. 265.—Dalla Torre, 1898, Cat. Hym. 5:3 (*fraternum*).—Girault, 1907, Psyche 14:33.—Schmiedeknecht, 1909, Gen. Ins. fasc. 97, p. 485 (*fraternum*).—Girault, 1912, Bull. Wis. Nat. Hist. Soc. 10:96.

Holcopelte fraterna (Fitch): Ashmead in Smith, 1900, Ins. N.J., p. 560.

Horismenus fraternus (Fitch): Viereck in Smith, 1910, Ins. N.J., p. 641.—Viereck, 1916, Conn. State Geol. Nat. Hist. Sur. Bull. 22, p. 458.—Dunnam, 1924, Iowa Agr. Expt. Sta. Bull. 220, p. 65.—Doner, 1936, Ann. Ent. Soc. Amer. 29: 234.—Copenhafer and Parker, 1938, Jour. Kans. Ent. Soc. 11:46.—Glick, 1939, U.S. Dept. Agr. Tech. Bull. 673, p. 48.—Nickels, 1948, Jour. Econ. Ent. 41: 114.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 218.

Elachistus euplectri Howard in Riley, 1885, U.S. Dept. Agr. Rpt. 4, Ent. Com., Appendix, p. 108.—Cresson, 1887, Synopsis Hym. Amer. N. of Mex., p. 243.—Dalla Torre, 1898, Cat. Hym. 5:78.—Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 394 (*Elachertus*). **New synonymy.**

Holcopelte euplectri (Howard): Ashmead, 1894, Trans. Amer. Ent. Soc. 21:342.—Ashmead in Smith, 1900, Ins. N.J., p. 560.—Schulz, 1906, Spol. Hym., p. 143.

Horismenus euplectri (Howard): Viereck, 1916, Conn. State Geol. Nat. Hist. Sur. Bull. 22, p. 458.—Britton, 1938, Conn. State Geol. Nat. Hist. Sur. Bull. 60, p. 144.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 217.

Holcopelte violacea Ashmead, 1887, Trans. Amer. Ent. Soc. 14:200.—Dalla Torre, Cat. Hym. 5:29.—Bridwell, 1899, Trans. Kans. Acad. Sci. 16:206. **New synonymy.**

Horismenus violaceus (Ashmead): Marshall and Musgrave, 1937, Can. Ent. 69: 101.—Nickels, 1948, Jour. Econ. Ent. 41:114.—Beckham *et al.*, 1950, Va. Agr. Expt. Sta. Tech. Bull. 114, p. 12.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 468.—Schaffner, 1959, U.S. Dept. Agr. Misc. Pub. 767, p. 85.—Peck, 1963, Can. Ent. Suppl. 30, p. 223.—Burks in Krombein and Burks, 1967, U.S. Dept. Agr. Monog. 2, Suppl. 2, p. 234.

Trichogramma? *fraterna* Fitch was described from an unknown number of specimens. A single female type specimen is now preserved in

the U.S.N.M. collection. This is labeled, "5837, Fitch's Type, From Fitch's Collection, Type No. 1837 U.S.N.M. Trichogramma? Westwood, fraterna, Fitch, New York." This specimen should be considered to be the lectotype if other type specimens are discovered elsewhere. *E. euplectri* Howard was described from 2 specimens. Lectotype (♀), 41374 U.S.N.M., labeled, "2395°, *Elachistus euplectri* Howard ♀ E. A. S. coll." Present designation of lectotype. *H. violacea* Ashmead was described from 3 specimens. Lectotype female, 41372 U.S.N.M., labeled, "Jacksonville, Fla., *Holcopenete violacea* Ashm." Present designation of lectotype.

Distribution.—Conn. south to Fla. west to Wis., Iowa, Kans., and Tex.

This is principally a secondary parasite of Lepidoptera, attacking braconid and chalcidoid primary parasites. It also has been reared, however, as a primary parasite from lepidopterous leafminers and other minute lepidopterous hosts.

***Horismenus ignotus*, n. sp.**

Horismenus n. sp., Creighton, 1937, Jour. Econ. Ent. 30:595.

This species differs from all others in this genus in North America in having both the face and the median area of the propodeum sculptured rather than smooth and shining. It resembles *productus* Ashmead in having the legs beyond the coxae light yellow or white and in having an elongate, slender gaster.

Female.—Length, 2.0–2.5 mm. Shining black, sometimes with a metallic red-bronze luster on head, thoracic dorsum, propodeum, and basal gastral tergum; legs beyond coxae pale yellow or white; antennae and wing veins pale yellow. Body hairs noticeably long, legs hairy.

Face reticulated, genae smooth; parascrobal areas below frontal groove minutely reticulated; vertex minutely roughened, occiput more strongly so; temples smooth. Eyes with dense, short hair. Apex of antennal scape just surpassing frontal groove; relative proportionate lengths of parts of antenna—pedicel, 70; first funicular segment, 60; second, 50; third, 50; club, 100.

Entire thoracic dorsum shining, but faintly reticulated; lateral and apical margins of scutellum somewhat irregular and poorly defined, formed of rows of flattened punctures; postscutellum with a pair of elongate, submedian, shagreened areas at base, apex smooth and shining. Propleuron, prepectus, and area of mesopleuron ventral to base of forewing sculptured, rest of mesopleuron smooth; coxae minutely sculptured.

Propodeum lacking the usual narrow, smooth, longitudinal area, a rather broad, sculptured median area present instead, this limited laterally by a pair of parenthesis-shaped carinae; a pair of large, shagreened areas at anterior margin of propodeum, between median figure and spiracles; posterior neck of propodeum also shagreened, elsewhere propodeum smooth and shining; spiracles minute, round; paraspiracular carinae wanting. Petiole wider than long, lacking the median, dorsal, longitudinal carina; surface of petiole closely and minutely reticulated. Gaster slender, elongate, its length slightly greater than that of thorax and propodeum;

first gastral tergum comprising $\frac{1}{2}$ the dorsal length of gaster; posterior $\frac{1}{3}$ of first gastral tergum sculptured on dorsum.

Male.—Unknown.

Type locality.—Gainesville, Florida.

Type.—U.S.N.M. catalog no. 70846.

Described from 51 female specimens. Type and 3 paratypes, Gainesville, Florida, reared from material of the palm leaf skeletonizer, *Homaledra sabalella* (Chambers), G. L. Creighton; 34 paratypes, Orlando, Florida, reared May 2, 1914, from *Homaledra sabalella* on *Thrinax*; 13 paratypes, Hammond, Louisiana, reared June 11, 1923, by H. F. Cassell, possibly from *Homaledra sabalella*.

Biological relationships.—This may be a primary parasite of the larva of the palm leaf skeletonizer, *Homaledra sabalella* (Chambers).

***Horismenus latroducti*, n. sp.**

This species agrees with *lixivorus* Crawford in having the legs and the antennal scape dark and in having the funicular segments broad, slightly wider than long. They differ in that this species has the scutellum mostly smooth, rather than strongly reticulated, and the basal gastral tergum of this species comprises $\frac{1}{2}$ the gaster, while it comprises only $\frac{1}{3}$ of it in *lixivorus*.

Female.—Length, 1.5–1.8 mm. Shining black, without metallic luster; antennae brown; apices of femora, bases and apices of tibiae, and basal segments of tarsi white, legs otherwise dark brown to black; wing veins brown.

Face and genae smooth and shining; parascrobal areas below frontal groove shagreened; vertex reticulated, occiput and temples shagreened. Eyes densely hairy. Apex of antennal scape not quite reaching level of vertex; relative proportionate lengths of parts of antenna—pedicel, 50; first funicular segment, 30; second, 30; third, 30; club, 70.

Praescutum, scutum, and axillae lightly sculptured, scutellum smooth and shining in median area, very faintly reticulated at lateral margins; lateral and apical scutellar grooves minutely crenulate; postscutellum with a pair of elongate, submedian, shagreened areas at base, apex smooth and shining, propleuron reticulated, mesopleuron smooth and shining. All coxae smooth.

Propodeum smooth laterally and on narrow, elongate median area, the latter surrounded by a narrow shagreened area, this extending posteriorly to encircle apical neck of propodeum; propodeal spiracles small, oval, paraspicular carinae present, but poorly defined anteriorly. Petiole as broad as long, its surface minutely shagreened. Gaster as long as thorax, its apex acute; basal gastral tergum lightly sculptured apically and comprising basal $\frac{1}{2}$ of gaster; apical terga more heavily sculptured than basal one and clothed with conspicuously white, short bristles.

Male.—Length, 0.7–1.3 mm. Apex of antennal scape just reaching level of vertex; relative proportionate lengths of parts of antenna—pedicel, 40; first funicular segment, 30; second, 30; third, 30; fourth, 30; club, 50; petiole $1\frac{1}{2}$ times as long as wide; gaster $\frac{2}{3}$ as long as thorax, basal gastral tergum very faintly or not at all sculptured at apex and comprising from $\frac{3}{4}$ to $\frac{9}{10}$ of the gaster.

Type locality.—Uvalde, Texas.

Types.—Holotype (♀) and paratypes, U.S.N.M. catalog no. 70844.

Described from 22 female and 9 male specimens reared at Uvalde, Texas, September 12, 1941, from an egg sac of the black widow spider, *Latrodictus mactans* (Fabricius), by H. M. Brundrett.

Biological relationships.—This is a secondary parasite. The egg sac from which the *Horismenus* specimens emerged contains puparia of chloropid flies that show emergence holes of parasites. The chloropid was undoubtedly the primary parasite; it probably was *Pseudogaurax signatus* (Loew).

***Horismenus lixivorus* (Crawford)**

Horismenus lixivorus Crawford, 1907, Jour. N.Y. Ent. Soc. 15:180.

Horismenus lixivorus (Crawford): Pierce, 1908, Jour. Econ. Ent. 1:385.—Pierce, 1910, Jour. Econ. Ent. 3:453.—Mitchell and Pierce, 1911, Proc. Ent. Soc. Wash. 13:51.—Pierce *et al.*, 1912, U.S. Dept. Agr. Bur. Ent. Bull. 100, p. 75.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 219.—Burks in Krombein and Burks, 1967, U.S. Dept. Agr. Monog. 2, Suppl. 2, p. 234.

When he described this species, Crawford undoubtedly spelled the generic name *Horismenus* as *Horisemus* only in error. The fact, however, that he used that spelling along with the description of a valid species must, unfortunately, make *Horisemus* a published name, unavailable for use again elsewhere in Zoological nomenclature. Neave (1939) lists *Horisemus* Crawford, 1907, in vol. II of Nomenclator Zoologicus as a published generic name.

H. lixivorus was described from an unstated number of male and female specimens. There are now 5 type specimens in the U.S.N.M. Collection. Lectotype (♀), U.S.N.M. 10046, labeled, "Hunter No. 1082, Par. *Lixus musculus*, P. 1906, p. V.11.a 10/16, Dallas, Tx., X.2.06." Present designation of lectotype.

Distribution.—Tex., Ariz.

This is a primary parasite of curculionid beetles. It has been reared from *Lixus perforatus* LeConte, *L. musculus* Say, and *L. scrobicollis* Boheman. Mitchell and Pierce, 1911, *loc. cit.*, have also recorded this species from *Cylindrocopturus*, but I have not been able to locate the material on which that record was based. Published records of this species from a lepidopterous leafminer (Proctor, 1938, and a later edition) are based on a misidentification.

***Horismenus microgaster* (Ashmead)**

Holcopelte microgaster Ashmead, 1888, Can. Ent. 20:102.—Dalla Torre, 1898, Cat. Hym. 5:28.

Horismenus microgasteri (!) Burgess, 1906, Ohio Dept. Agr. Div. N. and O. I., Ann. Rpt. 4, p. 14.—Cotton, 1906, Ohio Dept. Agr., Div. N. and O. I., Bull. 7, p. 51.—Washburn, 1906, U.S. Dept. Agr. Bur. Ent. Bull. 60, p. 73.—Howard

and Chittenden, 1907, U.S. Dept. Agr. Bur. Ent. Cir. 96, p. 5.—Howard and Chittenden, 1916, U.S. Dept. Agr. F. Bull. 705, p. 5.

Horismenus microgaster (Ashmead): Crawford, 1907, Jour. N.Y. Ent. Soc. 15: 180.—Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 433.—Girault, 1911, Can. Ent. 43:407.—Proper, 1934, Jour. Agr. Res. 48:365.—Langford, 1937, Jour. Econ. Ent. 30:322.—Bissell, 1938, Jour. Econ. Ent. 31:536.—Procter, 1938, Biol. Surv. Mt. Des. Reg., p. 429.—Reinhart, 1938, Tex. Agr. Expt. Sta. Bull. 559, p. 31.—Summerland, 1938, Trans. Kans. Acad. Sci. 40:167.—Parker and Lamerson, 1939, Verh. VII Int. Cong. Ent. 4:2384.—Gould and Geissler, 1940, Jour. Econ. Ent. 33:815.—Schread *et al.*, Conn. Agr. Expt. Sta. Bull. 461, p. 492.—Whitcomb *et al.*, 1943, Mass. Agr. Expt. Sta. Bull. 409, p. 8.—Procter, 1946, Biol. Surv. Mt. Des. Reg., p. 490.—Peck in Muesebeck, *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Beal, 1952, Duke Univ. For. Bull. 14, p. 29.—Hill and Hough, 1957, Va. Agr. Expt. Sta. Tech. Bull. 130, p. 16.—Schaffner, 1959, U.S. Dept. Agr. Misc. Pub. 767, p. 85.—Peck, 1963, Can. Ent. Suppl. 30, p. 220.—Burks in Krombein and Burks, 1967, U.S. Dept. Agr. Monog. 2, Suppl. 2, p. 234.

Pediobioidea cyanea Webster, 1909, Iowa Agr. Expt. Sta. Bull. 102, p. 207 (ms. name).—Girault, 1911, Can. Ent. 43:407 (syn. under *Horismenus microgaster* when described).

Pseudomphale ancylae Girault, 1916, Ent. News 27:223.—Leach, 1916, U.S. Dept. Agr. Dept. Bull. 435, p. 11. **New synonymy.**

Horismenus ancylae (Girault): Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.

It is debatable whether or not the name *Pediobioidea cyanea* Girault should be listed in the bibliography. In his 1911 paper Girault states that he gave this name to Webster in 1909 and that Webster used it in a paper. (In Webster's paper the name was accompanied only by host records, so it was not validated.) After 1909, Girault realized that *cyanea* was a synonym of *Horismenus microgaster*, and he did not publish a description of *cyanea*. Instead, in his 1911 paper, Girault listed *Pediobioidea cyanea* as a synonym of *Horismenus microgaster* and gave a lengthy description of *microgaster*, being careful to state that this description was drawn not from the type of *microgaster* but from the specimens on which he had intended to base the description of *Pediobioidea cyanea*. Thus Girault certainly came as near as he possibly could to describing a new genus and species while stating that he was not doing it.

H. microgaster Ashmead was described from a single male specimen; the type is U.S.N.M. 12205. *P. ancylae* Girault was described from 1 male and 1 female specimens. Lectotype (♀), 20131 U.S.N.M., labeled, "Winchester, Va., IV-10-1915, Reared from *Ancylus nubeculana*. Quaintance No. 7867, B. R. Leach Coll." Specimen on a point, but head and one pair of wings mounted on a slide. Present designation of lectotype. No types were designated for the stillborn *P. cyanea* Gir-

aunt, although Webster's original material is preserved in the U.S.N.M. collection.

Distribution.—Maine south to N.C., west to Iowa, Kans., and Tex.

This is a common secondary parasite of Lepidoptera, attacking ichneumonoid and chalcidoid primary parasites. It also has been reared, apparently as a primary parasite, from lepidopterous leafminers and other minute Lepidoptera.

Horismenus missouriensis (Ashmead)

Holcopelte missouriensis Ashmead, 1888, Can. Ent. 20:101.—Dalla Torre, 1898, Cat. Hym. 5:28.

Horismenus missouriensis (Ashmead): Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 433.—Girault, 1934, Mir. et Hym. Nova Austr., p. 3.—Bissell, 1938, Jour. Econ. Ent. 31:536.—Brimley, 1938, Ins. N. C., p. 424.—Brett, 1946, Jour. Agr. Res. 73:84.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Burks in Krombein *et al.*, 1958, U.S. Dept. Agr. Monog. 2, Suppl. 1, p. 68.—Peck, 1963, Can. Ent. Suppl. 30, p. 221.

Holcopelte popenoei Ashmead, 1888, Can. Ent. 20:101.—Wickham, 1895, Bull. Iowa Lab. Nat. Hist. 3:35.—Dalla Torre, 1898, Cat. Hym. 5:28.—Bridwell, 1899, Trans. Kans. Acad. Sci. 16:206.

Horismenus popenoei (Ashmead): Quaintance, 1907, U.S. Dept. Agr. Bur. Ent. Bull. 68, p. 29.—Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 433.—Viereck, 1916, Bull. Conn. State Geol. Nat. Hist. Sur. 22, p. 458.—Gahan, 1930, Proc. U.S. Natl. Mus. 77(8):8.—Girault, 1934, Mir. et Hym. Nova Austr., p. 3 (syn. of *missouriensis*).—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 221.

H. missouriensis Ashmead was described from 2 female specimens. Lectotype (♀), U.S.N.M. 41369, labeled, "Missouri, *Holcopelte missouriensis* Ashm. Type." Present designation of lectotype. Only this specimen can at present be located in the collection, but the other type specimen may be found later. Consequently it seems best to designate a lectotype. *H. popenoei* Ashmead was described from 4 female specimens. Lectotype (♀), U.S.N.M. 41370, labeled, "Mar. 15, Riley Co., F. Marlatt, 149, 1274." Present designation of lectotype.

Distribution.—N.Y. south to Ga., west to S. Dak., Kans. and Okla.

This is a primary parasite of bruchids, having been reared from *Acanthoscelides*, *Amblycerus*, *Gibbobruchus*, and "*Bruchus* sp."

Horismenus nitens (Howard)

Holcopelte nitens Howard, 1892, Proc. Ent. Soc. Wash. 2:298.—Dalla Torre, 1898, Cat. Hym. 5:28.

Horismenus nitens (Howard): Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 433.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 221.

H. nitens Howard was described from 2 male and 5 female specimens; these specimens are still in the U.S.N.M. collection, but all are

more or less broken. Lectotype (♀), U.S.N.M. 2686, labeled, "Washington, D.C., Epeira, Holcopena nitens How. ♀ type." Present designation of lectotype.

Distribution.—D.C.

This is a secondary parasite in the egg sacs of epeirid spiders.

Horismenus productus (Ashmead)

Holcopena producta Ashmead, 1894, Trans. Amer. Ent. Soc. 21:342.—Townsend, 1895, Can. Ent. 27:277.—Dalla Torre, 1898, Cat. Hym. 5:28.—Cockerell, 1899, Trans. Kans. Acad. Sci. 16:214.

Horismenus productus (Ashmead): Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 433.—Crawford, 1911, Proc. U.S. Natl. Mus. 40:446.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 222.

H. producta Ashmead was described from "several" specimens of both sexes. There are now 1♀, 3♂ type specimens in the U.S.N.M. collection. Lectotype (♀), U.S.N.M. 2184, labeled, "N. Mex." Present designation of lectotype.

Distribution.—Tex., N. Mex., Ariz., Calif.

This is a primary parasite of bruchids. It has been reared from *Mimosestes amicus* (Horn), *Algarobius prosopis* (LeConte), *Acanthoscelides horni* (Pic), and an undetermined bruchid in *Astragalus*.

Horismenus sardus (Walker)

Entendon (*Horismenus*) *sardus* Walker, 1847, Ann. Mag. Nat. Hist., ser. 1, 20:23.—Cresson, 1862, Proc. Ent. Soc. Philad. 1:231.

Entendon sardus Walker: Howard, 1885, U.S. Dept. Agr. Bull. Div. Ent. 5, p. 47.—Cresson, 1887, Synopsis Hym. Amer. N. of Mex., p. 245.

Encyrtus sardus (Walker): Dalla Torre, 1898, Cat. Hym. 5:263.—Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 246.

Pseudomphale sardus (Walker): Girault, 1918, Ent. News 29:130.

Horismenus sardus (Walker): Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 468.—Peck, 1963, Can. Ent. Suppl. 30, p. 222.

Elachistus (!) *flavipes* Ashmead, 1886, Trans. Amer. Ent. Soc. 13:133.—Cresson, 1887, Synopsis Hym. Amer. N. of Mex., p. 244 (*Elachistus*). **New synonymy.**

Holcopena flavipes (Ashmead): Ashmead, 1887, Trans. Amer. Ent. Soc. 14:200.—Dalla Torre, 1898, Cat. Hym. 5:28.

Horismenus flavipes (Ashmead): Schmiedeknecht, 1909, Gen. Ins., fasc. 97, p. 432.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, Can. Ent. Suppl. 30, p. 218.

E. sardus was apparently described from one female specimen from "North America." A single ♀ type specimen, in good condition, is now in the British Museum (Natural History) collection and is labeled, "Sardus, Type, *Horismenus sardus* Walk. Type, G. J. Kerrich." *E. flavipes* Ashmead was described from one female specimen. The type is U.S.N.M. 41373.

Horismenus texanus (Girault)

Pseudomphale texana Girault, 1917 (1916), *Ins. Ins. Mens.* 4:120.

Horismenus texanus (Girault): Gahan, 1933, U.S. Dept. Agr. Misc. Pub. 174, p. 128.—Allen and Painter, 1937, *Jour. Agr. Res.* 55:225.—Britton, 1938, *Conn. State Geol. Nat. Hist. Sur. Bull.* 60, p. 144.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 468.—Nikolskaya, 1952, *Chalcid Fauna USSR*, p. 268.—Peck, 1963, *Can. Ent. Suppl.* 30, p. 222.

P. texana Girault was described from one female specimen. Type, U.S.N.M. 20661. Specimen badly damaged, with fragmentary parts mounted on a slide and remains of thorax and abdomen on a card point.

Distribution.—Conn. south to Ga. and La., west to Iowa, Kans., Tex., N. Mex., and Ariz.

This is a primary parasite of small Diptera living in the stems of grasses. It has been reared from the Hessian fly, *Mayetiola destructor* (Say), the wheat stem maggot, *Meromyza americana* Fitch, and the otitid *Eumetopiella rufipes* (Macquart). Specimens have also been reared from grasses without a clear indication of their hosts, but the hosts were probably dipterous.

EXCLUDED SPECIES

Galeopsomyia haemon (Walker), n. comb.

Tetrastichus haemon Walker, 1847, *Ann. Mag. Nat. Hist.*, ser. 1, 20:28.—Howard, 1885, U.S. Bur. Ent. Bull. 5, p. 47 [*laemon*].—Cresson, 1887, *Synopsis Hym. Amer. N. of Mex.*, p. 245.—Dalla Torre, 1898, *Cat. Hym.* 5:16.—Schmiedeknecht, 1909, *Gen. Ins.*, fasc. 97, p. 475.

Horismenus haemon (Walker): Burks, 1943, *Proc. U.S. Natl. Mus.* 93:605.—Peck in Muesebeck *et al.*, 1951, U.S. Dept. Agr. Monog. 2, p. 467.—Peck, 1963, *Can. Ent. Suppl.* 30, p. 219.

In 1938, when I was working on a revision of the North American species of *Tetrastichus*, I requested information about the type of *Tetrastichus haemon* Walker from Ch. Ferrière, who was at that time at the British Museum. The information he sent to me led me to believe that *haemon* was a *Horismenus*. Unfortunately, that is incorrect, and *haemon* actually belongs in *Galeopsomyia* Girault, according to recent information sent to me by G. J. Kerrich. Accordingly I am here transferring *haemon* to *Galeopsomyia*. It may be the same species as *G. columbiana* (Ashmead), 1888, although specific differences in the genus *Galeopsomyia* have not yet been worked out. *T. haemon* was described from 4 specimens from Florida; I here designate the lectotype. It is a female specimen, deposited in the British Museum (Natural History) type collection, and is labeled "haemon" in Walker's hand and "Type CF 1938." There are 3 other specimens of *haemon* in the main B. M. collection, a female and 2 males.

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**NORTH AMERICAN DELTOCEPHALINE LEAFHOPPERS OF
THE GENUS AMBLYSELLUS SLEESMAN**
(HOMOPTERA: CICADELLIDAE)

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ABSTRACT—The North American genus *Amblysellus Slesman* is redefined to include seven species: *A. curtisii* (Fitch); *A. wyomus*, n. sp.; *A. durus* (Beamer and Tuthill), n. comb.; *A. valens* (Beamer and Tuthill), n. comb.; *A. dorsti* (Oman), n. comb.; *A. punctatus* (Osborn and Ball), n. comb.; and *A. grex* (Oman), n. comb. All species are keyed and redescribed with all critical diagnostic features illustrated. New distributional records and host plant data are included.

The genus *Amblysellus Slesman* has been long defined on the basis of the only included species, *Amblycephalus curtisii* Fitch, a common eastern North American deltocephaline leafhopper. A study of *Deltocephalus* Burmeister, *Amblysellus* and 16 related North American

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